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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,113	04/08/2004	Kaoru Higuchi	1248-0714PUS1	8367

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

LAMB, BRENDA A

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

5

Office Action Summary	Application No. 10/820,113	Applicant(s) HIGUCHI ET AL.	
	Examiner Brenda A. Lamb	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Newly submitted claim 22 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the pattern formation apparatus of claim 22 is directed to a different specie of pattern formation apparatus than the specie set forth in the originally filed claims, that is, pattern formation apparatus of claim 22 is required to have only two elements and these elements are as follows: a substrate including a concave section; and a top plate wherein the top plate set forth in newly presented claim 22 differs from the top plate set forth the originally filed claims in that it requires the top plate have one or more melted portions which combine the substrate and top plate while the originally claimed pattern formation apparatus does not require the top plate having one or more melted portions and therefore is open with the term "comprising" to the top plate having no melted portions and with the combining layer serving as the sole means for combining the top plate and the substrate.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 22 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5 and 19-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject

matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The originally filed specification fails to teach or suggest that the final end product, pattern formation apparatus, includes a combining layer having one or more melted portions which infers that the melted portions are maintained in a melted state during use of the pattern formation apparatus which is not taught or suggested in the originally filed specification.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishida et al.

Ishida et al teaches the design of a pattern formation apparatus comprised of the following elements: a substrate including a concave section; a top plate that is combined with a surface of the substrate where the concave section is provided; a combining layer, provided on at least one of the substrate and the top plate, via which the substrate and the top plate are combined with each other; and nozzles defined by the substrate and top plate which has been defined by the combining layer. Further, Ishida et al teaches at column 2 lines 11-19 bonding occurs when layers are superimposed one other and then subjected to the application of voltage and pressure while a glass layer, one the layers of the multilayer substrate, is subjected to a temperature which is equal to the softening point of the glass to form a multilayer composite substrate. Therefore, the recitation that the at least one combining layer having one or more melted portions does not structurally further limit the apparatus over Ishida et al since portions of the Ishida et al combining layer or glass layer which is subjected to a temperature equal to its softening point read on melted portions since applicant set forth in the instant specification at paragraph 0025 indicates that term "melting" includes solid-phase-bonding between layers pressed against each other is enabled by softening the layers with heat. Therefore, Ishida et al has a pattern formation

apparatus within the scope of claim 1 (In re Thorpe 227 USPQ 964). With respect to claim 2, Ishida et al teaches the combining layer of the pattern formation apparatus is made mainly of metal or silicon dioxide (see column 4 lines 29-31). With respect to claim 3, Ishida et al teaches that at least one of the substrate and the top plate is made mainly of material within the scope of the claim (see column 3 line 60 to column 4 line 31).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al in view of Takatori et al.

Ishida et al is applied for the reasons noted above. Ishida et al fails to teach the substrate and the top plate include surfaces to be combined with each other whose relative roughness is not more than 0.1 um. However, Takatori teaches the maximum surface roughness of the surfaces which form the orifice of the ink jet printer is 0.1 or less as disclosed in order to achieve very good image quality. Therefore, it would have been obvious to provide the substrate and top plate which define the peripheral surfaces of the orifices of the Ishida et al pattern formation apparatus with a roughness within the scope of the claim since Takatori teaches in a pattern formation apparatus such as Ishida et al providing the surfaces which define the orifices with a roughness of 0.1 in order maximize image quality (see Example 1).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al in view of Okuda et al.

Ishida et al is applied for the reasons noted above. Ishida et al teaches each of the nozzles has an opening section from which the ink is jetted out but fails to teach the

opening section has an area within the scope of the claim. However, it would have been obvious to optimize the opening area of nozzles of the Ishida et al pattern formation apparatus such that it is within the scope of the claim since Okuda et al teaches a pattern formation apparatus wherein the opening area is within the scope of the claim for the taught advantage of optimizing size of the nozzle to optimize re-filling of the pattern formation apparatus (see column 8 lines 24-26).

Claims 1 and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugata et al.

Sugata et al teaches the design of a pattern formation apparatus comprised of the following elements: a substrate 11 including a concave section; a top plate 19 that is combined with a surface of the substrate where the concave section is provided; a combining layer, provided on at least one of the substrate and the top plate, via which the substrate and the top plate are combined with each other; and nozzles defined by the substrate and top plate which has been defined by the combining layer. Further, Sugata et al teaches bonding occurs when the combining layer is heated to the melt temperature of the combining layer thereby providing one or more melted portions via which the substrate and top plate are combined with each other. Thus every element of the pattern formation apparatus as set forth in claim 1 is taught by Sugata et al. With respect to claim 21, the same rejection applied to claim 1 is applied here. Sugata et al in Figure 4 shows that the at least one combining layer includes one or more concave sections provided between the substrate and the top plate. With respect to claims 19-20, Sugata et al in Figure 4 shows that the at least one combining layer covers an inner

surface of the nozzles as shown in Figure 2 and Figure 4 and the at least one combining layer is interposed between the top plate and an interior of the nozzle.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugata et al in view of Takatori et al.

Sugata et al is applied for the reasons noted above. Sugata et al fails to teach the substrate and the top plate include surfaces to be combined with each other whose relative roughness is not more than 0.1 μm . However, Takatori teaches the maximum surface roughness of the surfaces which form the orifice of the ink jet printer is 0.1 or less as disclosed in order to achieve very good image quality. Therefore, it would have been obvious to provide the substrate and top plate which define the peripheral surfaces of the orifices of the Sugata et al pattern formation apparatus with a roughness within the scope of the claim since Takatori teaches in a pattern formation apparatus such as Ishida et al providing the surfaces which define the orifices with a roughness of 0.1 in order maximize image quality (see Example 1).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugata et al in view of Okuda et al.

Sugata et al is applied for the reasons noted above. Sugata et al teaches each of the nozzles has an opening section from which the ink is jetted out but fails to teach the opening section has an area within the scope of the claim. However, it would have been obvious to optimize the opening area of nozzles of the Sugata et al pattern formation apparatus such that it is within the scope of the claim since Okuda et al teaches a pattern formation apparatus wherein the opening area is within the scope of the claim

for the taught advantage of optimizing size of the nozzle to optimize re-filling of the pattern formation apparatus (see column 8 lines 24-26).

Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al in view of Sugata et al.

Ishida et al is applied for the reasons noted above. Ishida et al fails to teach the combining layer covers an inner surface of the nozzles or the at least one combining layer is interposed between the top plate and an interior of the nozzle or at least one combining layer includes one or more concave sections provided between the substrate and the top plate. However, it would have been obvious to modify the Ishida et al by extending the combining layer to cover an inner surface of the nozzles and/or extending the combining layer such that recited layer is interposed between the top plate and an interior of the nozzle and/or at least one combining layer includes one or more concave sections provided between the substrate and the top plate for the advantages taught by Sugata et al of applying the combining layer to the whole surface of the substrate including the concave section thereby providing a combining layer including one or more concave sections which covers an inner surface of the nozzles and such layer is interposed between the top plate and an interior of the nozzle - reduced complexity of manufacturing the ink jet nozzle (see column 4 lines 11-21).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda A. Lamb whose telephone number is (571) 272-1231. The examiner can normally be reached on Monday-Tuesday and Thursday-Friday with alternate Wednesdays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla, can be reached on (571) 272-1231. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in cursive script that reads "Brenda A Lamb".

Brenda A Lamb

Examiner

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